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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,600	11/22/2006	Cheol-Seob Lee	21334-1565	1781

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EXAMINER

RUTLAND WALLIS, MICHAEL

ART UNIT	PAPER NUMBER
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2836

NOTIFICATION DATE	DELIVERY MODE
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02/15/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/564,600	Applicant(s) LEE ET AL.	
	Examiner MICHAEL RUTLAND WALLIS	Art Unit 2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/13/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement filed 1/13/2006 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Objections

Claim 9 is objected to because the limitation "the voltage" is unclear. Applicant should clarify which voltage is intended as claim 6 recites "a voltage of the vehicle battery", and "a proper voltage".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -
(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claim 6 and 10-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Yabe et al. (U.S. Pat. No. 6,770,985) Yabe teaches an electric power controller for a vehicle (for example Fig. 2), comprising: an overheat detector (formed with items D10 and D20, see col. 4 lines 55-60) for detecting whether a power line (line connecting battery to load) supplying power from a vehicle battery to a vehicle load (items LM) is overheated; a voltage detector (see circuit DT3) for detecting a voltage of the vehicle battery (V_{battery}); a voltage converter (level shift circuit LS) for converting power from the vehicle battery into a proper voltage (col. 8 lines 15-30) and outputting a switching control signal (connection to gate terminal of MOSFET see Fig. 2 for example) reflecting the proper voltage; a switching unit (MOSFET Q) for performing ON/OFF switching operations (conducting/non-conducting) based on the switching control signal to control power from the vehicle battery to the vehicle load; and a controller (item CO and control GC) for inputting an overheat signal (see input of interrupting signal in Fig. 2 for example) from the overheat detector (DT1) and the voltage from the voltage detector (DT3), determining whether there is an abnormal current (see operation described in col. 8 line 30 or col. 9 line 36), outputting a switching control signal (gate driving signal), corresponding to a change of the voltage (see Fig. 10 illustration of V_f change and V_f absolute), to the switching unit (Q), and adjusting occurrence intervals of switching control signals (switching frequencies best seen in Fig. 15), corresponding to respective ON and OFF states, to control the magnitude of effective value of vehicle power supplied to the vehicle load via the switching unit.

With respect to claim 10 Yabe teaches the voltage detector comprises: an element (diodes) for measuring a voltage (V_f) of the vehicle battery; and an amplifier (see buffer amplifier, Fig. 2). Yabe does not teach for amplifying a voltage difference between terminals of the element

With respect to claim 11 Yabe teaches the controller adjusts occurrence intervals of switching control signals corresponding to respective ON and OFF states if the vehicle battery outputs a transient current (see item DT2), so as to reduce a magnitude of power supplied to the vehicle load.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. (U.S. Pat. No. 6,770,985) in view of Yoshida et al. (U.S. Pat. No. 6,294,845)

With respect to claim 7 Yabe teaches the controller outputs determination information of the abnormal current according to the change of the voltage. Yabe does not teach storing the determination information of the abnormal current and outputting the same to an external vehicle controller. Yoshida teaches (for example col. 8 lines 50-60) storing abnormality information. It would have been obvious to one of ordinary

skill in the art at the time of the invention to modify Yabe to store information relating to the occurrence of an abnormality so that user or technician may later utilize the information to determine the source of the abnormality and eliminate future occurrences.

Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. (U.S. Pat. No. 6,770,985) in view of Ishii (U.S. Pat. No. 6,128,560)

With respect to claim 8 Yabe teaches the controller controls the switching unit to switch its OFF state to its ON state when receiving a reset signal (see power-on reset signal Fig. 15). Yabe does not teach the use of an external vehicle controller. Ishii teaches an external vehicle controller for inputting and receiving signals. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Yabe to include the use of an external vehicle controller in order to allow maintenance personnel to diagnose and correct an abnormal state.

With respect to claim 9 Yabe does not teach the use of external diagnosis unit. Ishii teaches an external vehicle controller. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Yabe to output the voltage from the voltage detector to an external unit in order to allow personnel to correctly identify and eliminate the abnormality.

Claims 12-13, 18-21 and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. (U.S. Pat. No. 6,770,985) in view of Bax et al. (U.S. Pat. No. 7,016,171)

With respect to claim 12 Yabe teaches an electric power controller for a vehicle (for example Fig. 2), comprising: an overheat detector (D10 and D20, see col. 4 lines 55-60) for detecting whether a power line (line connecting battery to load) supplying power from a vehicle battery to a vehicle load (items LM) is overheated; a voltage detector (see VS connection, and see circuit DT3) for detecting a voltage of the vehicle battery (V_{battery}); a voltage converter (level shift circuit LS) for converting power from the vehicle battery into a proper voltage (col. 8 lines 15-30) and outputting a switching control signal (connection to gate terminal of MOSFET see Fig. 2 for example) reflecting the proper voltage; a switching unit (MOSFET Q) for performing ON/OFF switching operations (conducting/non-conducting) based on the switching control signal to control power from the vehicle battery to the vehicle load; and a controller (item CO and control GC) for inputting an overheat signal (see input of interrupting signal in Fig. 2 for example) from the overheat detector (DT1) and the voltage from the voltage detector (DT3), determining whether there is an abnormal current (see operation described in col. 8 line 30 or col. 9 line 36), outputting a switching control signal (gate driving signal), corresponding to a change of the voltage (see Fig. 10 illustration of V_f change and V_f absolute), to the switching unit (Q), and adjusting occurrence intervals of switching control signals (switching frequencies best seen in Fig. 15), corresponding to respective ON and OFF states, to control the magnitude of effective value of vehicle power supplied to the vehicle load via the switching unit. Yabe does not teach the electric power controller is installed in a printed circuit board of a junction box and electrically connected thereto. Bax teaches a fault detector and circuit packaging

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thereof which is implemented on a circuit wiring board. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Yabe to implement the power controller in a printed circuit board in order to easily reproduce the circuitry.

With respect to claims 13 and 21 Yabe as modified above teaches the electric power controller is integrated with the junction box as compliant pins of the electric power controller are inserted into through holes in the printed circuit board of the junction box (see for example Bax Fig. 19c, 20c or 24c).

With respect to claim 18 and 26 Yabe teaches the voltage detector comprises: an element (diodes) for measuring a voltage (V_f) of the vehicle battery; and an amplifier (see buffer amplifier, Fig. 2) for amplifying a voltage difference between terminals of the element.

With respect to claim 19-20 and 27-28 Yabe teaches the controller adjusts occurrence intervals of switching control signals corresponding to respective ON and OFF states if the vehicle battery outputs a transient current (see item DT2), so as to reduce a magnitude of power supplied to the vehicle load.

Claim 14 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. (U.S. Pat. No. 6,770,985) in view of Bax et al. (U.S. Pat. No. 7,016,171) in further view of Yoshida et al. (U.S. Pat. No. 6,294,845)

With respect to claim 14 and 22 Yabe teaches the controller outputs determination information of the abnormal current according to the change of the voltage. Yabe does not teach storing the determination information of the abnormal current and outputting the same to an external vehicle controller. Yoshida teaches (for

example col. 8 lines 50-60) storing abnormality information. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Yabe to store information relating to the occurrence of an abnormality so that user or technician may later utilize the information to determine the source of the abnormality and eliminate future occurrences.

Claim 15-17 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. (U.S. Pat. No. 6,770,985) in view of Bax et al. (U.S. Pat. No. 7,016,171) in view of Yoshida et al. (U.S. Pat. No. 6,294,845) in view of Ishii (U.S. Pat. No. 6,128,560)

With respect to claim 15-16 and 23-24 Yabe teaches the controller controls the switching unit to switch its OFF state to its ON state when receiving a reset signal (see power-on reset signal Fig. 15) and determining the state of abnormal voltage and current. Yabe does not teach the use of an external vehicle controller. Ishii teaches an external vehicle controller for inputting and receiving signals. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Yabe to include the use of an external vehicle controller in order to allow maintenance personnel to diagnose and correct an abnormal state.

With respect to claim 17 and 25 Yabe does not teach the use of external diagnosis unit. Ishii teaches an external vehicle controller. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Yabe to outputs the abnormal current state from the detector in order to allow personnel to correctly identify and eliminate the abnormality.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Rutland-Wallis whose telephone number is 571-272-5921. The examiner can normally be reached on Monday-Thursday 7:30AM-6:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on 571-272-2084. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Michael J Sherry/
Supervisory Patent Examiner, Art Unit 2836

MRW